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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/797,425

03/10/2004

Pradip K. Roy

TPS-008

4397

37694

7590

04/06/2006

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EXAMINER

LEE, EDDIE C H

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/797,425	<b>Applicant(s)</b> ROY ET AL.	
	<b>Examiner</b> Eddie C. Lee	<b>Art Unit</b> 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 54-57 is/are pending in the application.
- 4a) Of the above claim(s) 4,6,7,9,10,15-24,28 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8, 11-14, 25-27 and 54-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 11-14, 25-27 and 55-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Sagnes (5,998,289).

Sagnes discloses a method of fabricating a SiGe thin layer semiconductor structure, the method comprising: providing a substrate "SB" having a dielectric layer 1 thereon to a processing chamber of a process system (col. 6, line 41). Depositing a SiGe layer over the dielectric layer so as to have a variable composition over at least a portion of the thickness thereof. For this limitation, see col. 6, lines 41-50 where Sagnes describes a process where the SiGe layer is "non-continuous," "non-uniform," and variable "composition." Sagnes further discloses forming a Si cap layer 4. Furthermore, note column 7, lines 37-46, where Sagnes discloses plural layers of SiGe having different/variable compositions.

Regarding claims 2 and 3, Sagnes discloses a semiconductor substrate "SB", and a silicon oxide layer 1.

Regarding claims 11 and 55, Sagnes discloses both single wafer and batch-type process systems.

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Regarding claims 12, 13, 14, 25-27, gases/compounds, temperature, pressure, etc, recited in these claims are disclosed by Sagnes in cols. 5 and 6. Note the 6 examples in the these columns.

Regarding claims 56 and 57, the language of these claims merely recite well know, industry wide practice of monitoring and adjusting parameters during the manufacturing process of semiconductor structure/devices. Other words, it is routine in the art to monitor the manufacturing process, whereby temperature, pressure, flow rate of gases, etc, are in turn adjusted/varied to meet/maintain specified tolerances. Therefore, Uejima as modified above implicitly discloses the language of claims 56 and 57.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 8 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagnes in view of Uejima.

The difference between Sagnes and the claimed invention is "the variable composition SiGe layer includes providing a graded Ge content, with the Ge content

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being in the range of about 0.2 to about 0.5 adjacent the dielectric layer and decreasing to a value of 0.1 or less adjacent the Si cap layer.”

However, Uejima discloses in Fig. 2 a layer of variable composition SiGe having “a graded Ge content, with the Ge content being in the range of about 0.2 to about 0.5 adjacent the dielectric layer and decreasing to a value of 0.1 or less adjacent the Si cap layer.”

In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sagnes by having “a graded Ge content, with the Ge content being in the range of about 0.2 to about 0.5 adjacent the dielectric layer and decreasing to a value of 0.1 or less adjacent the Si cap layer.” The ordinary artisan would have been motivated to modify Sagnes in the manner described above for at least the purpose of reducing “weak reliability layer” resulting in higher performance of the gate.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-3, 5, 8, 11-14, 26-27 and 54-57 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Eddie C. Lee at telephone number 571-272-1732.

A handwritten signature in black ink, appearing to read 'Eddie Lee', is positioned above the printed name and title.

**EDDIE LEE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**